

**We claim:**

1. A method for providing a relative level of fairness and Quality of Service (QoS) in a wireless local area network (WLAN) network comprising:
  - identifying a set of non-interfering access points;
  - allowing only the identified set of non-interfering access points to transmit during a Contention-Free Period (CFP) slot; and
  - allowing all access points to transmit after the end of the CFP.
2. The method as in claim 1 further comprising dividing the CFP into one or more slots.
3. The method as in claim 2 further comprising:
  - assigning one or more of the so divided slots to an access point which is allowed to transmit based on the number of users associated with the access point.
4. The method as in claim 3 further comprising:
  - assigning the so divided slots to access points to maximize a lower bound of a slot-to-user ratio.
5. The method as in claim 2 further comprising:
  - assigning at least one so divided slot to each access point.
6. The method as in claim 1 further comprising controlling each access point making up the identified set of non-interfering access points to ensure each access point begins and ends a transmission during the CFP slot.
7. The method as in claim 1 further comprising:
  - transmitting an instruction to initiate transmission of one or more beacon messages to prevent users associated with access points from transmitting prior to the beginning of the CFP.
8. The method as in claim 7 further comprising:
  - transmitting an instruction to initiate transmission of one or more beacon messages such that no two adjacent APs in an interference graph may send beacon messages substantially simultaneously.

9. A system for providing a level of fairness and Quality of Service (QoS) in a WLAN comprising:

a controller operable to;  
identify a set of non-interfering access points;  
allow only the identified set of non-interfering access points to transmit during a Contention-Free Period (CFP) slot; and  
allow all access points to transmit after the end of the CFP.

10. The system as in claim 9, wherein the controller is further operable to divide the CFP into one or more slots.

11. The system as in claim 10, wherein the controller is further operable to assign one or more of the so divided slots to an access point which is allowed to transmit based on the number of users associated with the access point.

12. The system as in claim 11, wherein the controller is further operable to:

assign the so divided slots to access points to maximize a lower bound of a slot-to-user ratio.

13. The system as in claim 10, wherein the controller is further operable to assign at least one so divided slot to each access point.

14. The system as in claim 8 wherein the controller is further operable to control each access point making up the identified set of non-interfering access points to ensure each access point begins and ends a transmission during the CFP slot.

15. The system as in claim 9, wherein the controller is further operable to transmit an instruction to initiate transmission of one or more beacon block messages to prevent users associated with access points from transmitting prior to the beginning of the CFP.

16. The system as in claim 15, wherein the controller is further operable to transmit an instruction to initiate transmission of one or more beacon messages such that no two adjacent APs in an interference graph may send beacon messages substantially simultaneously.

17. The system as in claim 9 further comprising one or more sets of non-interfering access points, each set of access points operable to:

transmit during at least one Contention-Free Period (CFP) slot;  
and

transmit after the end of the CFP.

18. A system for providing a relative level of fairness and Quality of Service (QoS) in a wireless local area network (WLAN) network comprising:

means for identifying a set of non-interfering access points;

means for allowing only the identified set of non-interfering access points to transmit during a Contention-Free Period (CFP) slot;  
and

means for allowing all access points to transmit after the end of the CFP.

19. The system as in claim 18 further comprising means for dividing the CFP into one or more slots.

20. The system as in claim 19 further comprising:

means for assigning one or more of the so divided slots to an access point which is allowed to transmit based on the number of users associated with the access point.

21. The system as in claim 20 further comprising:

means for assigning the so divided slots to access points to maximize a lower bound of a slot-to-user ratio.

22. The system as in claim 19 further comprising:

means for assigning at least one so divided slot to each access point.

23. The system as in claim 18 further comprising means for controlling each access point making up the identified set of non-interfering access points to ensure each access point begins and ends a transmission during the CFP slot.

24. The system as in claim 18 further comprising:

means for transmitting an instruction to initiate transmission of one or more beacon messages to prevent users associated with access points from transmitting prior to the beginning of the CFP.

25. The system as in claim 24 further comprising:

means for transmitting an instruction to initiate transmission of one or more beacon messages such that no two adjacent APs in an interference graph may send beacon messages substantially simultaneously.